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Production, Distribution, Conservation and Consumption, as well
as on Public Health, and Race and Population Problems as Related
to the Countries Bordering on the Pacific.

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Objects of the Pan-Pacific Research Institution

The policy of the Pan-Pacific Research Institution is to pursue research work in the Pacific, seeking to bring together the actual and active research workers throughout that great area in friendly cooperative effort.

For the present the Institution will concern itself primarily with problems of food production, distribution, conservation and consumption, as well as with the problems of public health, and race and population problems as related to food production and consumption.

The executive offices of the Institution as well as its guest-house and conference center are located for the present in Honolulu in the buildings and grounds provided for that purpose by the Pan-Pacific Union.

The permanent organization will include a board of trustees with one member named by each Pacific country.

A Board of Governors as a local executive body composed as follows: The chairmen of each of the following permanent committees on Aquatic Resources, Crop Production and Improvement, Plant Constituents, Race and Population, Health and Sanitation, Pan-Pacific Economic Botanic Garden, Animal Husbandry, Meteorology and Topography, Food Transportation and Distribution, International Law, Economic Insects and Plant Pests, together with the chairman of the Science Council of the Pan-Pacific Union, the Director General of the Pan-Pacific Research Institution, the honorary president of the Institution, with those annually appointed by the board from among the visiting scientists who are workers at the Pan-Pacific Research Institution in Hawaii.

It is planned to have branches of the Institution in all Pacific lands to carry on actual local research work, or to cooperate with already existing research workers in Pacific lands.

The Board of Governors has organized a number of its working committees, some of which are already engaged in research work. A Pan-Pacific fisheries conference has been in progress at the Research Institution and leading fishery students of Australasia, America, and the Orient have prepared or are preparing to publish reports in the Bulletin of the Pan-Pacific Research Institution.

The Board of Governors announces that particular stress will be placed upon the bringing about of international agreements or treaties needed for the development, proper utilization and conservation of the natural animal and plant resources of the Pacific area.

The Board of Governors is cooperating with the Pan-Pacific Union in the establishment in Honolulu on the grounds adjoining the buildings used by the Institution of an endowed dormitory where young men interested in science will be given an opportunity to live and earn their way by part time work with scientists engaged in research work, either as skilled or as unskilled helpers.

Among the activities the Institution expects to take up at once is the preparation of card indexes of: Islands in the Pacific, location, area, characteristic, principal natural products, population, etc.; races, tribes, languages of the Pacific, natural resources of the Pacific: 1. Land, as plants, mammals, birds, reptiles, economic insects, etc. 2. Aquatic, as fishes, mammals, birds, reptiles, mollusks, crustaceans, other invertebrates, plants, etc.

The Journal of the Research Institution will be open to all research workers who have contributions to the advancement of knowledge of the Pan-Pacific area. It is the feeling, however, that at first the problems of taxonomy in the biological sciences will take precedence, since such records are fundamental to the development of further research. This does not mean, however, that other meritorious research cannot be included from time to time. It is intended that the Journal will publish papers reporting only research of the highest standard.

A Check-List of the Fishes of Hawaii

By DAVID STARR JORDAN and BARTON WARREN EVERMANN

The present list comprises all the species of fishes thus far known from the waters surrounding Hawaii, Laysan Island, Wake Island and Johnston Island being included. It is based on the work of many different explorers who have visited the islands in the last hundred and fifty years. In each case, the accepted scientific name is given, followed by local Hawaiian name, and the English common name, so far as such terms exist.

The sequence of forms is that now accepted in scientific nomenclature. While in this paper it is not possible to discuss the individual species, a few abbreviations will indicate the general distribution.

Pel. (pelagic) indicates that the species is a free swimmer in the open sea. Such species are usually metallic steel blue in color above, silver below. Pelagic fishes have been sought mainly in the last twenty years and now form the most important part of the catch. There appears to be no evidence that their number has been materially reduced by over fishing.

Bath. (bathybial) indicates a bottom fish, or one found in deep water, (a quarter of a mile to five miles). These fishes are usually more or less black in color, often with luminous spots.

Mid. (midway) indicates a fish living at moderate depths, say 15 to 50 fathoms. Such fishes are almost always bright red in color.

Reef. Means fishes living about the reefs, at no great depth. Their colors are almost infinitely varied. To this group the great majority of Hawaiian fishes belong, and these have been greatly reduced in importance by over-fishing and especially by the use of dynamite. This sign should not be too rigidly in-

terpreted as many reef fishes wander to the open sea or to open spaces behind the reef.

Est. (estuary fishes) living behind the reefs, often in mouths of streams, some of them extending their range into fresh water.

* The star indicates species of commercial importance.

† The dagger indicates special excellence as food.

r. indicates that the species is very rare, only a few specimens being known.

rr. indicates that only a single specimen is known.

c. indicates that the species is common or abundant, usually seen daily in the markets.

C. & V. stands for Cuvier & Valenciennes, naturalists who described many fishes; J. & E. for Jordan & Evermann, L. for Linnæus; M. & H. for Müller & Henle; Q. & G. for Quoy & Gaimard; V. & S. for Vaillant & Sauvage; J. & S. for Jordan & Snyder. These authority names in each case indicate the describer of the species whether or not placed by him in the accepted genus.

This list of fishes from Hawaii is the seventy-sixth of the scientific memoirs, long and short, which treat of the fishes of these islands. The earliest record of a specimen actually preserved and sent to Europe is that of the long-nosed *lauiwiliwinukunukuooe*, obtained by Captain Cook on his third voyage (1778), and named *Chatodon longirostris* by Broussonet in 1782. It is now removed from that overcrowded genus, to be called *Forcipiger longirostris*.

The first actual collection of fishes was made by the French Corvette, *Uranie*, in 1819, and described by the surgeons of the vessel, Dr. Jean René

Quoy and Dr. Joseph Paul Gaimard, 22 species being recorded. The *Uranie* landed on "Owhyhee" (Hawaii) on August 15, 1819.

Of the many later collections, the most important were those of the U. S. S. Albatross in 1891 and 1902, described by Charles Henry Gilbert and Frank Cramer; that of Dr. Schauinsland in 1897, described by Dr. Franz Steindachner; of Dr. John K. Townsend, and others in 1835 and 1836, enumerated by Henry W. Fowler, and especially that by Dr. Oliver P. Jenkins, now of Stanford University, in 1889, 238 species being placed on record by him.

The first general survey was made under the auspices of the United States Government in 1901, under the direction of the present writers. In 1905, the report on the work was published by the United States Fish Commission in a large volume in which all the known species were described, most of them figured and many in colors.

In 1902, under direction of Dr. Charles Henry Gilbert, the Albatross made a thorough survey of the life of the ocean depths about the islands. These two reports were issued under the title of "The Aquatic Resources of the Hawaiian Islands."

Since these general reviews, on which all subsequent work has rested, the most

extensive memoir has been an annotated Catalogue by David Starr Jordan and Eric Knight Jordan, (1922) published by the Carnegie Museum and a later record by Eric Knight Jordan of additional species issued in 1925 by the United States National Museum.

In the present paper, certain species indicated as new to Hawaii, will be described in due time. We omit a few species recorded as Hawaiian pending verification. This explains breaks in serial numbers.

This paper was written at the Pan-Pacific Research Institution, at the instance of Mr. Alexander Hume Ford, Director of the Pan-Pacific Union, of which the newly organized Research Institution is a hopeful branch.

Besides our many obligations to Mr. Ford, whose guests we have been during our stay in Honolulu, we specially acknowledge our indebtedness to two former students of the senior author at Stanford University, Dr. James F. Illingworth, Research Associate at the Bishop Museum, and to Dr. Frederick G. Krauss, Professor in the University of Hawaii. We are also indebted to Mr. W. K. Alana, fish dealer, for varied courtesies.

DAVID STARR JORDAN

BARTON WARREN EVERMANN

Honolulu, October 15, 1925.

Family I.

BRANCHIOSTOMIDÆ. The Lancelets.

1. *Amphioxides pelagicus* Günther. Pel. r.

Family II.

SCYLLIORHINIDÆ. The Cat-Sharks.

2. *Apristurus spongiceps* Gilbert. Bath.

Family III.

CARCHARHINIDÆ. The Gray Sharks.
Mano.

3. *Galeorhinus japonicus* M. & H. Soup-fin Shark. Pel. r.
4. *Galeocerdo tigrinus* M. & H. Tiger Shark. Pel. r.
5. *Prionace glauca* L. Blue Shark. Pel. r.
6. *Carcharhinus melanopterus* Q. & G. Pel. Mano; Black-fin Shark.
8. *Carcharhinus phoreys* J. & E. Pel.

9. *Carcharhinus insularum* Snyder. Pel.

10. *Carcharhinus nesiotes* Snyder. Pel. c.

Family IV.

SPHYRNIDÆ. The Hammerhead Sharks.

11. *Sphyrna zygaena* L. Mano; Hammer-head Shark. Reef c.

Family V.

ALOPIIDÆ. The Thresher Sharks.

12. *Alopias vulpinus* Bonnaterre. Fox Shark; Thresher. Pel. r.

Family VI.

LAMNIDÆ. The Mackerel Sharks.

13. *Isurus glaucus* M. & H. Mackerel Shark. Pel.
14. *Carcharodon carcharias* L. Niuhi; Man-eater; Great White Shark. Pel. r.

Family VII.

- ECHINORHINIDÆ. The Bramble Sharks.
 15. *Echinorhinus brucus* Bonnaterre. Bramble Shark. Pel. r.

Family VIII.

SQUALIDÆ. Ihu; Dog-fishes.

16. *Squalus mitsukurii* J. & S. Reef.
 17. *Etmopterus villosus* Gilbert. Bath.
 18. *Centroscyllium ruscum* Gilbert. Bath.

Family IX.

DASYTIDÆ. The Sting Rays.

19. *Dasyatis scierus* Jenkins. Reef.
 20. *Dasyatis latus* Garman. Reef rr.
 21. *Dasyatis hawaiiensis* Jenkins. Reef rr.

Family X.

AETOBATIDÆ. The Eagle Rays.

22. *Stoasodon narinari* Euphrasen. Hihimunanu. Pel.

Family XI.

MOBULIDÆ. The Devil Rays.

23. *Mobula japonica* M. & H. Pel. r.
 24. *Monta birostris* Walbaum. Pel. r.

Family XII.

CHIMÆRIDÆ. The Chimærae.

25. *Psychichthys purpurascens* Gilbert. Black Chimæra. Bath.

Family XIII.

ELOPIDÆ. The Tenpounders. Awa.

26. †**Elops hawaiiensis* Regan. Awa. Reef c.

Family XIV.

ALBULIDÆ. The Lady-fishes.

27. †**Albula virgata* Jordan & Jordan. Oio; Lady-fish. Reef c.

Family XV.

CHANIDÆ. The Milk-fishes.

28. †**Chanos cyprinella* C. & V. Awa-awa; Puawa; Awa Kalamoku. Reef c.

Family XVI.

DUSSUMIERIIDÆ. The Round Herrings.

29. *Etrumeus micropus* Schlegel. Maki-awa; Est.
 30. *Stolephorus delicatulus* Bennett. Est. r.

Family XVII.

ENCTRAULIDÆ. The Anchovies.

31. *Anchoviella purpurea* Fowler. Nehu. Est. c.

Family XVIII.

GONORHYNCHIDÆ.

32. *Gonorhynchus moseleyi* Jordan & Snyder. Reef r.

Family XIX.

STOMIATIDÆ. The Wide Mouths.

33. *Leptostomias macronema* Gilbert. Bath.

Family XX.

ASTRONESTHIDÆ. The Deep Sea Lizards.

34. *Astronesthes lucifer* Gilbert. Bath.

Family XXI.

GONOSTOMIDÆ. The Deep Water Anchovies.

35. *Cyclothone rhodadenia* Gilbert. Bath.
 36. *Cyclothone canina* Gilbert. Bath.
 37. *Cyclothone atraria* Gilbert. Bath.

Family XXI. A

MAUROLICIDÆ. The Cucumber Fishes.

38. *Argyripnus ephippiatus* Gilbert & Cramer. Bath.
 39. *Vinciguerria nimbaria* Jordan & Williams. Bath. r.

Family XXII.

STERNOPTYCHIDÆ.

The Broad Lantern Fishes.

40. *Sternoptix diaphana* Hermann. Bath.
 41. *Polyipnus nuttingi* Gilbert. Bath.
 42. *Argyropelecus heathi* Gilbert. Bath.
 43. *Diplophos pacificus* Günther. Bath.

Family XXIII.

HALOSAURIDÆ. The Halosaurs.

44. *Aldrovandia kauaiensis* Gilbert. Bath.
 45. *Aldrovandia verticalis* Gilbert. Bath.
 46. *Aldrovandia proboscidea* Gilbert. Bath.

Family XXIV.

SYNODONTIDÆ. The Lizard Fishes.

47. *Trachinocephalus limbatus* Eydoux & Souleyet. Kawalea; Welea. Reef.
 48. *Synodus varius* Lacépède. Ulae. Reef c.
 49. *Synodus kaianus* Günther. Bath.
 50. *Saurida gracilis* Q. & G. Ulae. Reef c.

Family XXV.

CHLOROPHTHALMIDÆ. The Green Eyes.

51. *Chlorophthalmus prolidens* Gilbert & Cramer. Bath c.

Family XXVI.

BATHYPTEROIDÆ.

52. *Bathypterois antennatus* Gilbert. Bath.

Family XXVII.

PARALEPIDÆ. The Sea Robbers.

53. *Lestidium nudum* Gilbert. Bath.

Family XXVIII.

MYCTOPHIDÆ. The Lantern-Fishes.

54. *Neoscopelus macrolepidotus* Johnson. Bath.
 55. *Dasyseopelus pristilepis* Gilbert & Cramer. Bath.
 56. *Dasyseopelus spinosus* Steindachner. Bath.
 57. *Rhinoseopelus tenuiculus* Garman. Bath.
 58. *Myctophum fibulatum* Gilbert & Cramer. Bath.
 59. *Myctophum affine* Lütken. Bath.
 60. *Myctophum evermanni* Gilbert. Bath.
 61. *Myctophum reinhardti* Brauer. Bath.
 62. *Myctophum hollandi* Jordan & Jordan. Bath.
 63. *Centrobranchus chærocephalus* Fowler. Bath.
 64. *Centrobranchus gracilicaudus* Gilbert. Bath.
 65. *Diaphus urolampus* Gilbert & Cramer. Bath.

66. *Diaphus chrysorhynchus* Gilbert & Cramer. Bath.
 67. *Diaphus adenomus* Gilbert. Bath.
 68. *Lampanyctus omostigma* Gilbert. Bath.
 69. *Nannobranchium nigrum* Günther. Bath.
 70. *Nyctimaster reinhardtii* Jordan. Bath r.

Family XXIX.

SYNAPHOBRANCHIDÆ. The Deep Sea Eels.

71. *Synaphobranchus brachysomus* Gilbert. Bath.

Family XXX.

CONGRIDÆ. The Congers.

72. *Conger marginatus* Valenciennes. Puhī uha. Reef c.
 74. *Alloconger bowersi* Jenkins. Reef c.
 75. *Congrina aquorea* Gilbert & Cramer. Bath.
 76. *Veternio verrens* Snyder. Reef r.
 77. *Promyllantor alcocki* Gilbert & Cramer. Bath.

Family XXXI.

MURÆNESOCIDÆ. The Piko-Eels.

78. *Rhechias armiger* Jordan. Mid. r.

Family XXXII.

NETTASTOMIDÆ. The Sorcerers.

79. *Metopomycter denticulatus* Gilbert. Bath.

Family XXXIII.

NEMICHTHYIDÆ. The Snipe-Eels.

80. *Nematoprora polygonifera* Gilbert. Bath.
 81. *Serrivomer beani* Gill & Ryder. Bath.
 82. *Stemonidium hypomelas* Gilbert. Bath.

Family XXXIV.

OPHICHTHYIDÆ. The Snake-Eels.

83. *Sphagebranchus flavicaudus* Snyder. Reef r.
 84. *Leiruranus semicinctus* Lay & Bennett. Reef r.
 85. *Microdonophis fowleri* J. & E. Reef r.
 86. *Jenkinsiella macgregori* Jenkins. Reef r.
 87. *Brachysomophis henshawi* J. & S. Reef rr.
 88. *Myrichthys stypurus* Smith & Swain. Reef rr.
 89. *Myrichthys magnificus* Abbott. Reef rr.
 90. *Callechelys luteus* Snyder. Reef r.

Family XXXV.

MORINGUIDÆ. The Worm-Eels.

91. *Moringua hawaiiensis* Snyder. Reef r.

Family XXXVI.

MURÆNIDÆ. The Morays; Puhī.

92. *Muraena kailua* J. & E. Puhī Kauila. Reef.
 93. *Enchelynassa canina* Q. & G. Reef.
 94. *Gymnothorax undulatus* Lacépède. Puhī laumili. Reef c.
 95. *Gymnothorax eurostus* Abbott. Reef r.
 96. *Gymnothorax laysanus* Steindachner. Reef.
 97. *Gymnothorax meleagris* Shaw. Reef r.
 98. *Siderea steindachneri* J. & E. Reef.
 99. *Gymnothorax gracilicauda* Jenkins. Reef r.
 102. *Gymnothorax ercodes* Jenkins. Reef r.
 103. *Gymnothorax berndti* Snyder. Reef r.
 104. *Gymnothorax flavomarginatus* Rüppell. Reef.

105. *Gymnothorax thalassopterus* Jenkins. Reef r.

106. *Gymnothorax goldsbroughi* J. & E. Reef rr.

107. *Gymnothorax petelli* Bleeker. Reef c.

108. *Gymnothorax mucifer* Snyder. Reef r.

109. *Gymnothorax waialua* Snyder. Reef r.

110. *Ahynnodontis xanthostomus* Snyder. Reef.

111. *Siderea hilonis* J. & E. Reef r.

112. *Siderea nuttingi* Snyder. Reef r.

113. †*Siderea picta* Ahl. Puhī Kapaa. Reef c.

114. *Eurymyctera acutirostris* Abbott. Reef rr.

115. *Echidna nebulosa* Ahl. Puhī Kapa. Reef c.

116. *Gymnomuraena zebra* V. & S. Reef.

117. *Leihala tritor* V. & S. Leihala. Reef r.

118. *Leihala zonata* Fowler. Reef c.

119. *Leihala psalion* Jenkins. Reef.

120. *Leihala zonophaea* J. & E. Reef.

121. *Leihala obscura* Jenkins. Reef.

122. *Uropterygius marmoratus* Lacépède. Reef.

123. *Uropterygius leucurus* Snyder. Reef rr.

124. *Scuticaria tigrina* Lesson. Reef r.

Family XXXVII.

BELONIDÆ. The Needle Fishes. Ahaaha.

125. *Platybelone platyura* Bennett. Reef r.

126. †*Tylosurus giganteus* Schlegel. Ahaaha;

- 126a. *Tylosurus* new species.

127. *Ablennes* new species.

Family XXXVIII.

HEMIRAMPHIDÆ. The Half-beaks. Iheihe.

128. *Hyporhamphus pacificus* Steindachner. Iheihe. Reef r.

129. *Hemiramphus depauperatus* Lay & Bennett. Me'eme'e; Iheihe. Reef c.

130. *Euleptorhamphus longirostris* l'Cuvier. Iheihe. Pel. r.

Family XXXIX.

EXOCETIDÆ. Flying-Fishes. Malolo.

131. *Fodiator rostratus* Günther. Pel. r.

132. *Evolantia microptera* C. & V. Pel. r.

133. *Parexocetus brachypterus* Solander. Pukiku. Pel. c.

134. *Exocetus volitans* L. Pel.

135. *Exonantes gilberti* Snyder. Pel.

136. †*Cypselurus simus* C. & V. Malolo. Pel. c.

137. *Cypselurus spilonotus* Bleeker. Pel.

138. *Cypselurus atrisignis* Jenkins. Pel. r.

Family XL.

MACROURIDÆ. The Grenadiers or Rat-tails.

140. *Gadomus melanopterus* Gilbert. Bath.

141. *Gadomus bowersi* Gilbert. Bath.

142. *Melanobranchus micronemus* Gilbert. Bath.

143. *Chalinura ctenomelas* G. & C. Bath.

144. *Optonus atherodon* G. & C. Bath c.

145. *Hymenocephalus tenuis* Gilbert & Hubbs. Bath.

146. *Hymenocephalus striatulus* Gilbert. Bath.

147. *Hymenocephalus aterrimus* Gilbert. Bath.
 148. *Hymenocephalus antræus* G. & C. Bath. c.
 149. *Macrourus ectenes* G. & C. Bath. a.
 150. *Macrourus propinquus* G. & C. Bath.
 151. *Macrourus holocentrus* G. & C. Bath. r.
 152. *Macrourus gibber* G. & C. Bath. r.
 153. *Macrourus burragei* Gilbert. Bath. r.
 154. *Macrourus hebetatus* Gilbert. Bath. r.
 155. *Macrourus obliquatus* Gilbert. Bath. r.
 156. *Macrourus longicirrhus* Gilbert. Bath. r.
 157. *Cœlorhynchus gladius* G. & C. Bath.
 158. *Cœlorhynchus aratrum* G. & C. Bath.
 159. *Cœlorhynchus doryssus* Gilbert. Bath.
 160. *Mataœcephalus acipenserinus* G. & C. Bath. c.
 161. *Malacocephalus hawaiiensis* Gilbert. Bath.
 162. *Trachonurus sentipellis* Gilbert & Cramer. Bath.

Family XLI.

GADIDÆ. The Cod-Fishes.

163. *Antimora microlepis* Bean. Bath.
 164. *Læmonema rhodochir* Gilbert. Bath. r.
 165. *Physiculus grinnelli* Jordan & Jordan. Midw. r.

Family XLII.

ZEIDÆ. The John Dories.

166. *Zenopsis japonica* Schlegel. Midw.
 167. *Stethopristes eos* Gilbert. Midw. r.
 168. *Cyttomimus stelgis* Gilbert. Midw. r.

Family XLIII.

GRAMMICOLEPIDÆ. The Wasp-Scale Fishes.

169. *Vesposus egregius* Jordan. Midw. rr.

Family XLIV.

ATELEOPIDÆ. The Ateleopes.

170. *Ateleopus plicatellus* Gilbert. Bath.

Family XLV.

BOTHIDÆ. The Brills.

171. *Pœcilopecta hawaiiensis* Gilbert. Bath.
 172. *Tæniopsetta radula* Gilbert. Bath.
 173. *Platophrys mancus* Broussonet. Reef.
 174. *Platophrys pantherinus* Rüppell. Est. cc.
 175. *Platophrys thompsoni* Fowler. Reef.
 176. *Platophrys chlorospilus* Gilbert. Bath.
 177. *Platophrys inermis* Gilbert. Bath.
 178. *Platophrys coarctatus* Gilbert. Bath.
 179. *Scæops hawaiiensis* Jordan. Reef.
 180. *Scæops xenandrus* Gilbert. Mid. c.
 181. *Scæops arenicola* J. & E. Reef.
 182. *Anticitharus debilis* Günther. Bath.
 183. *Chascanopsetta prorigera* Gilbert. Bath.
 184. *Pelecanichthys crumenalis* Gilbert & Cramer. Bath.

Family XLVI.

SAMARIDÆ. The Samarid Flounders.

185. *Samariscus corallinus* Gilbert. Bath.

Family XLVII.

CYNOGLOSSIDÆ. The Tongue Fishes.

186. *Symphurus undatus* Gilbert. Bath.
 187. *Symphurus strictus* Gilbert. Bath.

Family XLVIII.

MELAMPHAIDÆ. The Deep Sea Beryees.

188. *Melamphaës unicornis* Gilbert. Bath.
 189. *Caulolepis longidens* Gilbert. Bath.

Family XLIX.

POLYMIXIIDÆ. The Barbudos.

190. *Polymixia berndti* Gilbert. Bath. r.

Family L.

BERYCIDÆ. The Berycoids.

191. *Beryx decadactylus* Cuvier. Midw.

Family LI.

HOLOCENTRIDÆ. The Soldier Fishes. U'u; Aleihi.

192. *Holotrachys lima* C. & V. Reef c.
 193. *Ostichthys pillwaxi* Steindachner. Reef r.
 194. *Myripristis murdjan* Forskaol. U'u. Reef c.
 195. *Myripristis berndti* J. & E. Reef r.
 196. *Myripristis adustus* Günther. Reef r.
 197. *Myripristis sealei* J. & E. Reef.
 198. *Myripristis argyromus* J. & E. Reef r.
 199. *Myripristis symmetricus* J. & E. Reef.
 200. *Myripristis chryseres* J. & E. Pa'u. Reef.
 201. *Myripristis multiradiatus* Günther. Reef c.
 202. *Holocentrus diadema* Lacépède. Aleihi; Kalalao. Reef c.
 203. *Holocentrus microstomus* Günther. Reef.
 204. *Holocentrus punctatissimus* C. & V. Reef.
 205. *Holocentrus erythræus* Günther. Reef.
 206. *Holocentrus xantherythrus* J. & E. Reef.
 207. *Holocentrus ensifer* J. & E. Reef.
 208. *Holocentrus scythrops* J. & E. Reef.
 209. *Holocentrus sammara* Forskaol. Reef c.
 210. *Sargocentron spinifer* Forskaol. Reef.

Family LII.

AULOSTOMIDÆ. The Trumpet Fishes. Nenu.

211. *Aulostomus chinensis* Linnæus. Nenu. Reef.

Family LIII.

FISTULARIIDÆ. The Cornet Fishes.

212. *Fistularia petimba* Lacépède. Reef c.
 213. *Fistularia serrata* Cuvier. Reef.

Family LIV.

MACRORHAMPHOSIDÆ. The Snipe-Fishes.

214. *Macrorhamphosus hawaiiensis* Gilbert. Mid. (Laysan).

Family LV.

CENTRISCIDÆ. The Shrimp-Fishes.

215. *Aeoliscus strigatus* Günther. Reef r.

Family LVI.

SYNGNATHIDÆ.

The Pipe Fishes and Sea Horses.

216. *Microphis pleurotenia* Günther. Reef r.
 217. *Ichthyocampus erythræus* Gilbert. Mid. r.
 218. *Hippocampus hilonis* J. & E. Mid. r.
 219. *Hippocampus fisheri* J. & E. Reef.
 220. *Corythoichthys balli* Fowler. Reef r.

Family LVII.

PEGASIDÆ. Sea Moths.

- 221.
- Pegasus papilio*
- Gilbert. Mid. r.

Family LVIII.

LAMPRIDÆ. The Opahs.

222. †
- Lampris regius*
- Bonnaterre. Opah;
-
- Moon-fish; Mariposa. Pel. r.

Family LIX.

ATHERINIDÆ. The Silversides.

- 223.
- Hepsetia insularum*
- J. & E. Iao. Est. c.

Family LX.

MUGILIDÆ. The Mullet; Amaama.

224. *†
- Mugil japonicus*
- Schlegel. Ama-ama;
-
- Mullet. Est. cc.
-
- 225.
- Chaenomugil chaptali*
- Eydoux & Soule-
-
- yet. Uouoa. Reef.
-
- 225a.
- Myxus pacificus*
- Steindachner. Reef r.

Family LXI.

SYPHYRÆNIDÆ. The Barracudas.

226. *†
- Sphyræna helleri*
- Jenkins. Kawalea.
-
- Reef c.
-
227. *†
- Sphyræna snodgrassi*
- Jenkins. Kaku.
-
- Est. c.

Family LXII.

POLYNEMIDÆ. The Thread-Fishes.

Moi.

228. *†
- Polynemus sexfilis*
- C. & V. Moi; Moili-
-
- li. Reef.

Family LXIII.

XIPHIIDÆ. The Sword-Fishes.

229. *†
- Xiphias gladius*
- L. Sword Fish. Pel.

Family LXIV.

ISTIOPHORIDÆ. The Spear Fishes. A'u.

230. *†
- Tetrapturus mitsukurii*
- J. & S. A'u;
-
- Marlin-Fish.
-
231. *†
- Tetrapturus mazara*
- J. & S. Black
-
- Marlin. Pel. c.
-
- 232.
- Tetrapturus*
- , new species (slender).
-
233. †
- Istiophorus*
- , new species (very slender).
-
- Pel. r.
-
234. *†
- Istiophorus*
- , new species. Pel.
-
235. †
- Istiophorus gladius*
- Broussonet. Sail-
-
- fish. Pel.

Family LXV.

ACANTHORYBIIDÆ. The Onos.

236. *†
- Acanthocybium solandri*
- C. & V. Ono.
-
- Pel. c.

Family LXVI.

SCOMBRIDÆ. The Mackerels. Opelu.

237. *
- Pneumatophorus japonicus*
- Houttuyn.
-
- Opelu Palahu. Pel. c.
-
- 238.
- Nesogrammus thompsoni*
- Fowler.
-
- Midw. rr.

Family LXVII.

THUNNIDÆ. The Tunnies. Ahi; Aku.

- 239.
- Auxis thazard*
- Lacépède. Frigate Mack-
-
- erel. Pel.
-
240. *†
- Euthynnus yaito*
- Kishinouye. Kawa-
-
- kawa. Reef c.

241. *†
- Katsuwonus vagans*
- Bennett. Aku;
-
- Oceanic Bonito. Pel. c.

- 242.
- Sarda orientalis*
- Schlegel. Shore Bonito;
-
- Skipjack. Reef.

- 243.
- Thunnus orientalis*
- Schlegel. Tuna;
-
- Tunny. Pel.

244. *†
- Germo germo*
- Lacépède. Ahi; Albacore.
-
- Pel. c.

- 245.
- Parathunnus sibi*
- Schlegel. Shibi Al-
-
- bacore. Pel.

246. *†
- Neothunnus macropterus*
- Schlegel.
-
- Ahi; Yellow-fin Albacore. Pel.

247. *
- Neothunnus*
- , new species (high fin).
-
- Albacore. Pel.

248. *†
- Kishinoella rara*
- Kishinouye. Little
-
- Albacore. Pel.

Family LXVIII.

GEMPYLIDÆ. The Snake-Mackerels.

249. †
- Ruvettus tydemani*
- Weber. Walu.
-
- Pel. r.

- 250.
- Promethichthys solandri*
- C. & V. Pel. r.
-
- 251.
- Gempylus thyrstitoides*
- Lesson. Pel. r.

Family LXIX.

CORYPHÆNIDÆ. The Dolphins. Mahihi.

- 252.
- Coryphæna hippurus*
- L. Mahihi.
-
- Mahimahi. Dolphin. Dorado. Pel. c.
-
- 253.
- Coryphæna equisetis*
- L. Pel. r.

Family LXX.

NOMEIDÆ. The Man o' War Fishes.

- 254.
- Ariomma lurida*
- J. & S. Pel. r.
-
- 255.
- Ariomma evermanni*
- J. & S. Pel. r.
-
- 256.
- Cubiceps thompsoni*
- Fowler. Pel. r.

Family LXXI.

BRAMIDÆ. The Sea-Breams.

- 257.
- Taractes steindachneri*
- Döderlein. Pel. r.
-
258. †
- Eumegistus illustris*
- J. & J. Mukau.
-
- Pel. r.
-
- 259.
- Collybus drachme*
- Snyder. Pel. r.

Family LXXII.

SERIOLIDÆ. The Amber-Fishes.
Kahala.

260. *†
- Elagatis pinnulatus*
- Q. & G. Kamanu;
-
- "Sea-Salmon." Pel.
-
- 261.
- Naucrates indicus*
- Lesson. Pel. r.
-
262. *†
- Seriola sparna*
- Jenkins. Kahala. Pel.

Family LXXIII.

CARANGIDÆ. The Cavallas. Ulua.

- 264.
- Scomberoides tolooparah*
- Rüppell. Lae.
-
- Reef c.
-
- 265.
- Scomberoides sancti-petri*
- C. & V. Reef r.
-
- 266.
- Megalaspis cordyla*
- L. Reef r.
-
- 266a.
- Decapterus macrosomus*
- Bleeker. Reef.
-
267. *
- Decapterus pinnulatus*
- Eydoux & Soule-
-
- yet. Opelu. Reef c.
-
268. *†
- Decapterus canonoides*
- Jenkins. Reef.
-
270. *†
- Trachurops mauritiana*
- Q. & G. Reef c.
-
- 270a.
- Trachurops macrophthalmus*
- Rüppell.
-
- Reef.
-
271. *†
- Selar politus*
- Jenkins. Amuka;
-
- Puakahala. Reef c.
-
- 271a.
- Selar thompsoni*
- Seale. Reef r.
-
- 272.
- Caranx stellatus*
- Q. & G. Mukomimi.

273. *†*Caranx ignobilis* Forskaol. Pau'uu. Reef c.

274. *Caranx rhabdotus* Jenkins. Est. r.

275. *†*Caranx melampygus* C. & V. Ulua. Reef. Pel. c.

276. *†*Caranx marginatus* Gill. Reef c.

278. *Caranx elacate* J. & E. Reef r.

282. *Uraspis helvola* Forster. Reef r.

283. *Uraspis microptera* Rüppell. Reef r.

284. *†*Longirostrum cheilio* Snyder. Pel.

284b. *Longirostrum dasson* J. & S. Reef r.

285. *†*Carangoides jordani* Nichols. Ulua omilu. Reef c.

286. *Carangoides evermanni* Nichols. Reef r.

287. *Carangoides gymnotethoides* Bleeker. Pel. (Johnston's I.).

287a. *Citula ciliaris* Rüppell. Reef.

287b. *Citula oblongus* C. & V. Reef.

288. *Hynnix ajax* Snyder. Reef.

290. *Alectis ciliaris* Bloch. Ulua Kihikihi. Reef.

291. *Alectis major* C. & V. Reef.

292. *Gnathanodon speciosus* Forskaol. Pao-pao; Ulua pau'u. Pel. c.

Family LXXIV.

KUHLIIDÆ. The Sescles.

293. *†*Kuhlia sandvicensis* Steindachner. Aholehole. Est. cc.

294. *Safote taniura* C. & V. Pel. r.

Family LXXV.

APOGONIDÆ. The Cardinal Fishes. Upapalu.

295. *Pristiapogon menesemus* Jenkins. Upapalu. Reef c.

296. *Pristiapogon snyderi* J. & E. Reef c.

297. *Pristiapogon erythrinus* Snyder. Reef r.

298. *Ostorhynchus maculiferus* Garrett. Reef c.

299. *Lepidamia evermanni* J. & S. Reef r.

300. *Foa brachygramma* Jenkins. Reef.

301. *Apogonichthys waikiki* J. & E. Reef.

302. *Synagrops argyrea* Gilbert & Cramer. Bath.

303. *Hynnodus atherinoides* Gilbert. Bath.

304. *Scepterias fragilis* Jordan & Jordan. Mid. r.

Family LXXVI.

EPINEPHELIDÆ. The Sea Bass.

304a. *Promicrops quinquefasciatus* Vaillant & Bocourt. Mid. r.

305. *Stereolepidoides thompsoni* Fowler. Mid. r.

306. *Cephalopholis argus* Bloch & Schneider. Mid. r.

307. *Epinephelus qnernus* Seale. Hapu'upu'u. Mid. c.

308. *Epinephelus septemfasciatus* Thunberg. Reef r.

Family LXXVII.

SERRANIDÆ. The Serrans.

309. *Cæsioperca thompsoni* Fowler. Mid. r.

310. *Odontanthias elizabethæ* Fowler. Mid. r.

311. *Odontanthias fuscipinnis* Jenkins. Mid.

311a. *Odontanthias*, new species.

312. *Pseudanthias kelloggi* J. & E. Mid. r.

313. *Caprodon schlegeli* Günther. Mid. r.

314. *Caprodon longimanus* Günther. Mid. r.

315. *Symphysanodon carlsmithi* Jordan. Mid. r.

316. *Grammatonotus laysanus* Gilbert. Bath. (Laysan).

Family LXXVIII.

PSEUDOCHROMIDÆ.

317. *Pseudochromnis polyacanthus* Bleeker. Reef r.

Family LXXIX.

PRIACANTHIDÆ. The Big-Eyes.

317a. *Priacanthus japonicus* Schlegel. Reef.

318. †*Priacanthus meeki* J. & E. Ala-lauau. Reef c.

319. *†*Priacanthus carolinus* Lesson. Aweoweo. Reef c.

320. *Priacanthus alalaua* J. & E. Alalauau.

320a. *Priacanthus* new species. Reef r.

Family LXXX.

EMMELICHTHYIDÆ. The Red Porgies.

321. *Erythrocles scintillans* Jordan & Thompson. Mid.

Family LXXXI.

HISTIOPTERIDÆ. The Boar-Fishes.

322. *Histioporus typus* Bleeker. Mid. r.

Family LXXXII.

LUTIANIDÆ. The Snappers.

323. *†*Aprion virescens* C. & V. Uku. c.

324. *†*Pristipomoides violascens* J. & E. Opakapaka. Reef c.

325. *†*Ulaula sieboldi* Bleeker. Koa. Reef c.

326. *†*Rooseveltia brighami* Seale. Ukikiki; Kalikali. Mid. c.

327. *†*Etelinus marshi* Jenkins. Ulaula. Mid. c.

328. *†*Etelis evurus* Jordan & Evermann. Ulaula. Mid. c.

Family LXXXIII.

APHAREIDÆ.

328a. *Aphareus flavivultus* Jenkins.

329. *Aphareus furcatus* C. & V. Mid.

330. *Aphareus thompsoni* Fowler. Mid. r.

Family LXXXIII.(b)

CÆSIONIDÆ.

330a. *Cæcio*, new species. Reef r.

Family LXXXIV.

SPARIDÆ. The Porgies.

331. *Monotaxis grandoculis* Forskaol. Mu. Reef.

Family LXXXV.

KYPHOSIDÆ. The Rudder-Fishes. Nenu.

332. *Kyphosus sandvicensis* Sauvage. Nenu. Paii. Reef c.

333. *Kyphosus fuscus* Lacépède. Nenu; Manoloa. Reef c.

334. *Sectator azureus* J. & E. Mid. r.

Family LXXXVI.
GREGORYINIDÆ.

- 335.
- Gregorygina gygis*
- Fowler & Ball. Reef (Laysan) r.

Family LXXXVII.

MULLIDÆ. The Surmulletts. Weke.

336. *†*Mulloidies auriflamma* Forkaol. Weke Ula. Reef c.
337. *Mulloidies erythrinus* Klunzinger. Reef (Laysan).
338. *†*Mulloidies pflugeri* Steindachner. Weke Ula-Ula. Reef c.
339. *Mulloidies samoensis* Günther. Weke A'a. Reef.
341. *Mulloidies vanicolensis* C. & V. Reef (Johnston) r.
342. *†*Upeneus porphyreus* Jenkins. Kumu. Royal Surmullet. Reef c.
343. *†*Upeneus chryseredros* Lacépède. Moana Kea. Reef c.
344. *†*Upeneus multifasciatus* Q. & G. Moana. Reef c.
345. †*Upeneus bifasciatus* Lacépède. Munu. Reef.
346. †*Upeneus chrysonemus* J. & E. Yellow-bearded Surmullet. Reef c.
347. *Upeneus barberinus* Lacépède. Reef (Johnston) r.
348. *Upeneus crassilabris* C. & V. Reef.
349. †*Upeneus pleurostigma* Bennett. Reef c.
350. *†*Upeneoides arge* J. & E. Weke Pueo; Weke Pahulu; Crazy Surmullet. Reef c.

Family LXXXVIII.

MALACANTHIDÆ. The Malacanthus.

- 351.
- Malacanthus parvipinnis*
- Vaillant & Sauvage. Reef c.

Family LXXIX.

CHILODACTYLIDÆ. The Kikakapus.

- 352.
- Goniistius vittatus*
- Garrett. Kikakapu. Reef r.

Family XC.

CIRRHITIDÆ. The Pilikoas.

353. *Cirrhitoides bimacula* Jenkins. Reef r.
354. *Paracirrhites forsteri* Schneider. Hilu-piliko. Reef c.
355. *Paracirrhites arcatus* C. & V. Piliko. c.
356. *Paracirrhites cinctus* Günther. Piliko; Oopukahaihai. Reef c.
357. †**Cirrhitus marmoratus* Lacépède. Poo-poa; Oopukai. Reef c.

Family XCI.

CARACANTHIDÆ. The Caracanthus.

358. *Caracanthus maculatus* Gray. Reef r.
359. *Amphiprionichthys unipinna* Gray. Reef r.

Family XCII.

SCORPÆNIDÆ. The Scorpion-Fishes. Nohu.

- 360.
- Sebastapistes ballieui*
- Sauvage. Poopaa. Reef.

361. *Sebastapistes corallicola* Jenkins. Reef.
362. *Sebastapistes asperella* Bennett. Reef r.
363. *Sebastapistes coniota* Jenkins. Reef c.
364. *Sebastapistes galactacme* Jenkins. Reef c.
365. *Sebastapistes coloratus* Gilbert. Mid.
366. *Scorpenodes kelloggi* Jenkins. Reef c.
367. *Scorpenodes parvipinnis* Garrett. Reef r.
368. *Helicolenus rufescens* Gilbert. Mid. r.
369. *Pontinus spilistius* Gilbert. Mid.
370. *†*Merinthe macrocephala* Sauvage. Oopu Kai; Nohu. Mid. c.
371. *Setarches remiger* Gilbert & Cramer. Bath. c.
372. *Plectrogenium nanum* Gilbert. Bath.
373. *Scorpenopsis catocala* Jenkins. Nohu Omakaha. Reef c.
374. *Scorpenopsis cacopsis* J. & E. Reef.
375. *Scorpenopsis altirostris* Gilbert. Mid.
376. *Peloropsis xenops* Gilbert. Mid.
377. *Iracundus signifer* J. & E. Reef r.
378. *Taniantopus garretti* Günther. Reef r.
379. *Taniantopus citrinellus* Gilbert. Reef r.
380. *Brachirus barberi* Steindachner. Reef r.
381. *Brachirus chloreus* Jenkins. Reef r.
382. *Pterois sphex* J. & E. Reef r.

Family XCIII.

BEMBRADIDÆ. The Bembrads.

- 383.
- Bembradium roseum*
- Gilbert. Mid.

Family XCIV.

PERISTEDIIDÆ. The Peristedes.

384. *Peristedion engyceros* Günther. Mid. r.
385. *Peristedion gilberti* Jordan. Mid. r.
386. *Peristedion hians* Gilbert & Cramer. Bath.

Family XCV.

HOPLICHTHYIDÆ. The Deep-Sea Sculpins.

387. *Hoplichthys citrinus* Gilbert. Bath. c.
388. *Hoplichthys platophrys* Gilbert. Bath. r.

Family XCVI.

DACTYLOPTERIDÆ.

The Flying Gurnards.

- 389.
- Dactyloptena orientalis*
- C. & V. Lolo-oau. Reef r.

Family XCVII.

CAPROIDÆ. The Caproids.

390. *Antigonia steindachneri* J. & E. Mid. r.
391. *Antigonia eos* Gilbert. Mid. r.

Family XCVIII.

CHÆTODONTIDÆ. The Butterfly Fishes. Kihikihi.

392. *Forcipiger longirostris* Broussonet. Laui-wiliwili Nukunuku. Reef c.
393. *Chætodon setifer* Bloch. Kihikihi. Reef c.
394. *Chætodon lineolatus* C. & V. Reef.
395. *Chætodon lunula* Lacépède. Kikikapu.
395a. *Chætodon semeion* C. & V. Reef c.
396. *Chætodon unimaculatus* Bloch. Reef.
397. *Chætodon ornatissimus* Solander. Reef.
398. *Chætodon punctatofasciatus* C. & V. Reef.
399. *Chætodon ephippium* C. & V. Reef r.

400. *Chaetodon reticulatus* C. & V. Reef r.
 401. *Chaetodon fremblii* Bennett. Reef c.
 402. *Chaetodon trifasciatus* Park. Reef.
 403. *Chaetodon miliaris* Q. & G. Reef c.
 404. *Chaetodon quadrifasciatus* Gray. Reef.
 405. *Tifia corallicola* Snyder. Mid. r.
 406. *Roa excelsa* Jordan. Mid. r.
 407. *Micracanthus strigatus* C. & V. Reef c.
 408. *Heniochus macrolepidotus* L. Reef.
 409. *Chaetodontoplus flavissimus* Cuvier. Reef r.
 410. *Chaetodontoplus bicolor* Bloch. Reef r.
 411. *Chaetodontoplus arcuatus* Gray. Reef r.
 412. *Centropyge potteri* Jordan & Metz. Reef r.
 413. *Centropyge tutuila* Jordan & Jordan. Reef r.
 414. *Xiphypops fisheri* Snyder. Reef r.
 415. *Hemitaurichthys polylepis* Bleeker. Reef r.
 416. *Hemitaurichthys thompsoni* Fowler. Reef r.

Family XCIX.

ZANCLIDÆ. The Moorish Idols.

417. *Zanclus cornutus* L. Kihikihi. Reef c.
 418. *Zanclus ruthia* Bryan. Reef r.

Family C.

ACANTHURIDÆ. The Tangs. Ma'ii.

419. *Acanthurus achilles* Shaw. Pa Kuikui Reef.
 420. *Acanthurus olivaceus* Schneider. Naenae. Reef.
 421. *Acanthurus leucopareus* Jenkins. Ma'ikoiko. Reef.
 422. **Acanthurus matoides* C. & V. Maii; Walu. Reef c.
 423. *Acanthurus umbra* Jenkins. Reef.
 424. **Acanthurus dussumieri* C. & V. Puahu; Palau. Reef c.
 425. *Acanthurus thompsoni* Fowler. Reef r.
 426. *Acanthurus elongatus* Lacépède. Maii. Reef.
 428. *Acanthurus atramentatus* J. & E. Maiko. Reef.
 429. *Acanthurus guttatus* Schneider. Reef.
 430. *Acanthurus sandvicensis* Streets. Manini. Reef cc.
 431. *Zebrasoma veliferum* Bloch. Reef c.
 432. *Zebrasoma virgatum* Bennett. Reef r.
 433. *Scopas flavescens* Bennett. Laipala. Reef c.
 434. *Ctenochætus striatus* Q. & G. Reef.
 435. *Naso incipiens* Jenkins. Reef.
 436. *Naso brevirostris* C. & V. Kalalolo. Reef.
 437. **Naso unicornis* Forskaol. Kala. Reef c.
 438. *Callicanthus lituratus* Forster. Reef.
 439. *Callicanthus garretti* Seale. Reef.
 440. *Callicanthus metoposophron* Jenkins. Reef.

Family CI.

POMACENTRIDÆ. The Damsel-Fishes. Maorvias.

442. *Dascyllus albisella* Gill. Reef c.
 443. *Chromis verater* Jordan & Metz. Reef r.
 444. *Chromis elaphrus* Jenkins. Reef.

445. *Chromis sindonis* J. & E. Reef r.
 446. *Furcaria analis* Steindachner. Reef c.
 447. *Furcaria leucura* Gilbert. Mid. r.
 448. *Pomacentrus jenkinsi* J. & E. Reef c.
 449. *Abudefduf sordidus* Forskaol. Kupipi. Reef c.
 450. *Abudefduf abdominalis* Q. & G. Maomao. Reef c.
 451. *Abudefduf imparipinnis* Sauvage. Reef r.
 452. *Plectroglyphidodon johnstonianus* Fowler & Ball. Reef (Johnston).

Family CII.

LABRIDÆ. The Wrasses.

453. **Lepidaplois alboteniatus* C. & V. A'awa. Reef c.
 454. **Lepidaplois atrorubens* E. K. Jordan. A'awa. Reef c.
 455. *Lepidaplois strophodes* J. & E. Reef r.
 456. *Diastodon modestus* Garrett. Reef r.
 457. *Verreo oxycephalus* Bleeker. Reef r.
 458. *Verruculus sanguineus* J. & E. Mid. r.

Family CIII.

CORIDÆ. The Demoiselles.

459. *Hinalea axillaris* Q. & G. Omaka. Reef c.
 460. *Hinalea balteata* Q. & G. Hinalea. Reef c.
 461. *Pseudojulis cerasina* Snyder. Reef r.
 462. *Halichoeres ornatissimus* Garrett. Ohua Paawela. Reef.
 463. *Halichoeres lao* Jenkins. Lao. Reef.
 464. *Macropharyngodon geoffroyi* Q. & G. Hinalea Akilolo. Reef c.
 465. *Coris gaimardi* Q. & G. Hinalea Lolo. Reef c.
 466. *Coris lepomis* Jenkins. Hilu Laumcle. Reef.
 467. *Coris variegata* Rüppell. Reef r.
 468. **Coris eydouxii* C. & V. Hilu. Reef c.
 469. *Coris flavovittatus* Bennett. Reef r.
 470. *Coris greenovii* Bennett. Reef r.
 471. *Coris ballieui* Voillant & Sauvage. Reef c.
 472. *Coris rosea* Vaillant & Sauvage. Malamalama. Reef c.
 473. *Coris venusta* Vaillant & Sauvage. Reef.
 474. **Cheilio inermis* Forskaol. Reef cc.
 475. *Gomphosus varius* Lacépède. Akilolo. Reef c.
 476. *Gomphosus tricolor* Q. & G. Reef c.
 477. *Gomphosus sandwicensis* Günther. Reef r.
 478. *Anampses cuvieri* Q. & G. Opule; Hilu. Reef.
 479. *Anampses godeffroyi* Günther. Reef c.
 480. **Thalassoma purpureum* Forskaol. Olani; Olale; Hou; Palaca. Reef.
 481. **Thalassoma fuscum* Lacépède. Awela. Reef c.
 482. *Thalassoma ballieui* Vaillant & Sauvage. Hinalea Huahine. Reef c.
 483. *Thalassoma umbrostigma* Rüppell. Reef c.
 484. *Thalassoma duperrey* Q. & G. Hinalea Lauwili; A'alaihi. Reef c.
 485. *Thalassoma lutescens* Solander. Reef r.
 486. *Thalassoma neanis* J. & S. Reef r.

487. *Thalassoma aneitense* Günther. Reef r.
 488. *Cheilinoides jordani* Snyder. Reef r.
 489. *Pseudocheilinus octotania* Jenkins. Reef.
 490. *Pseudocheilinus evanidus* J. & E. Reef r.
 491. *Cheilinus hexagonatus* Günther. Poou. Reef c.
 492. *Cheilinus trilobatus* Lacépède. Reef c.
 493. *Cheilinus bimaculatus* C. & V. Reef c.
 494. *Novaculichthys woodi* Jenkins. Reef c.
 495. *Novaculichthys tæniourus* Lacépède. Reef c.
 496. *Novaculichthys kallosoma* Bleeker. Reef r.
 497. **Hemipteronotus baldwini* J. & E. Reef c.
 498. *Hemipteronotus umbrilatus* Jenkins. Reef.
 499. *Hemipteronotus jenkinsi* Snyder. Reef r.
 500. *Hemipteronotus copei* Fowler. Reef r.
 501a. *Hemipteronotus* new species. Reef r.
 501. *Xyrichthys niveilatus* J. & E. Reef.
 502. *Iniistius pavoninus* C. & V. Reef c.
 503. *Iniistius niger* Steindachner. Reef.
 504. *Cymolutes leclusei* Q. & G. Reef c.

Family CIV.

SPARISOMIDÆ. The Lesser Parrot-Fishes. Panuhunuhu.

505. **Leptoscarus irradians* Jenkins. Reef c.
 506. *Leptoscarus sandvicensis* C. & V. Panuhunuhu. Reef.
 507. *Leptoscarus cyclurus* Jenkins. Reef.
 508. *Leptoscarus snyderi* Jenkins. Reef.
 509. *Scaridea zonarcha* Jenkins. Reef.
 510. *Scaridea balia* Jenkins. Reef r.
 511. *Scaridea aërosa* J. & S. Reef.
 512. *Scaridea farrandi* E. K. Jordan. Reef r.

Family CV.

SCARIDÆ. The Parrot-Fishes.

513. *†*Scarus miniatus* Jenkins. Uhu. Reef c.
 514. *Scarus brunneus* Jenkins. Reef.
 515. *Scarus galena* E. K. Jordan. Reef.
 516. *Scarus dubius* Bennett. Reef.
 517. *Scarus borborus* Jenkins. Reef.
 518. *Scarus ahula* Jenkins. Aku Ula; Panuhunuhu. Reef.
 519. *Scarus paluca* Jenkins. Palukaluka. Reef.
 520. *Scarus kraussi* E. K. Jordan. Reef r.
 521. **Scarus perspicillatus* Steindachner. Uhiuliuli. Reef c.
 522. *Scarus jenkinsi* J. & E. Reef r.
 523. †*Scarus gilberti* Jenkins. Panuhunuhu. Reef c.
 524. *Scarus formosus* C. & V. Lauia. Reef.
 525. *Scarus erythron* C. & V. Reef (Laysan).
 526. *Scarus* new species. Reef.
 527. *Pseudoscarus jordani* Jenkins. Reef r.
 528. *Pseudoscarus troscheli* Bleeker. Reef r (Laysan).
 529. *Pseudoscarus heliotropinus* Bryan. Reef r.
 530. *Pseudoscarus vitriolinus* Bryan. Reef r.
 531. *Pseudoscarus xanthopleurus* Bleeker. Reef r.

Family CVI.

ECHENEIDÆ. The Remoras.

532. *Remora remora* L. Pel.
 533. *Remorina albescens* Schlegel. Pel. r.

Family CVII.

GOBIIDÆ. The Gobies.

534. *Electris sandwicensis* Vaillant & Sauvage. Oopu. Est. c.
 535. *Asterropteryx semipunctatus* Rüppell. Reef r.
 536. *Eviota epiphanes* Jenkins. Reef.
 537. *Gobiopterus farcimen* J. & E. Reef r.
 538. *Quisquilius eugenius* J. & E. Reef.
 539. *Bathygobius fuscus* Rüppell. Oopu. Est. c.
 540. *Oxyurichthys lonchotus* Jenkins. Est.
 541. *Opu nephodes* E. K. Jordan. Est. c.
 542. *Vitraria clarescens* J. & E. Reef r (Hilo).
 543. *Chlamydes laticeps* Jenkins. Reef r.
 544. *Gnatholepis knighti* J. & E. Est. (Hilo).
 545. *Kelloggella oligolepis* Jenkins. Reef r.
 546. *Chonophorus genivittatus* C. & V. Oopu. Est. c.
 547. *Chonophorus stamineus* Eydoux & Souleyet. Oopu. Est. c.
 547a. *Chonophorus* new species. Oopu. Est. c.
 548. *Sicydium stimpsoni* Gill. Est. (Hilo).
 549. *Sicydium albotæniatum* Günther. Est.
 550. *Lentipes concolor* Gill. Est. (Hilo).
 551. *Lentipes seminudus* Günther. Est. (Hilo).

Family CVIII.

PARRPERCIDÆ.

552. *Osurus schauinslandi* Steindachner. Reef c.
 553. *Neoperis roseiviridis* Gilbert. Mid.
 554. *Bembrops filifera* Gilbert. Bath.
 555. *Chrionema chryseres* Gilbert. Bath.
 556. *Chrionema squamiceps* Gilbert. Bath.
 557. *Pteropsaron incisum* Gilbert. Bath.

Family CVIX.

CHAMPSODONTIDÆ. The Champsodonts.

558. *Champsodon fimbriatus* Gilbert. Bath.

Family CX.

DRACONETTIDÆ. The Dragonets.

559. *Draconetta hawaiiensis* Gilbert. Mid. r.

Family CXI.

CALLIONYMIDÆ. The Dragonets.

560. *Callionymus cæruleonotatus* Gilbert. Mid.
 561. *Callionymus corallinus* Gilbert. Mid. r.
 562. *Callionymus rubrovinctus* Gilbert. Mid.
 565. *Calliurichthys decoratus* Gilbert. Mid.
 564. *Callionymus astrinus* Jordan & Jordan. Mid. r.
 565. *Calliurichthys zanectes* Jordan & Jordan. Mid. r.

Family CXII.

LOPHOTIDÆ.

566. *Lophotes capellei* Schlegel. Mid. r. (Laysan).

Family CXIII.

CLINIDÆ. The Scaled Blennies.

567. *Enneapterygius atripes* Jenkins. Reef.

Family CXIV.

BLENNIIDÆ. The Blennies.

568. *Blennius rhabdotrachelus* Fowler & Ball. Reef (Wake) rr.
 569. *Cirripectes alboapicalis* Ogilby. Reef r.

570. *Rupiscartes variolosus* C. & V. Reef.
 571. *Rupiscartes marmoratus* Bennett. Reef c.
 572. *Rupiscartes gibbifrons* Bennett. Reef r.
 573. *Rupiscartes quagga* Fowler & Ball.
 Reef r (Wake).
 574. *Salarias zebra* Vaillant & Sauvage.
 Reef c (Wake).
 575. *Salarias edentulus* Schneider. Reef r.
 576. *Salarias meleagris* Valenciennes. Reef r.
 577. *Exallias brevis* Kner. Pao Okauila.
 Reef.
 578. *Enchelyurus ater* Günther. Reef c.
 579. *Enchelyurus edmondsoni* Fowler. Reef r.

Family CXV.

CONGROGADIDÆ. The Cod-Eels.

580. *Congrogadus marginatus* Vaillant & Sauvage. Reef r.

Family CXVI.

BROTULIDÆ. The Brotulids.

581. *Brotula marginalis* Jenkins. Mid.
 582. *Brotula multicirrata* Vaillant & Sauvage.
 Mid.

Family CXVII.

LYCODAPOPIDÆ.

583. *Snyderina canina* Gilbert. Bath.

Family CXVIII.

TRICHONOTIDÆ.

584. *Crystallodytes cookei* Fowler. Est. r.

Family CXIX.

CARAPIDÆ. The Pearl-Fishes.

585. *Carapus homei* Richardson. Reef r.
 586. *Carapus microdon* Gilbert. Mid. r.
 587. *Jordanicus umbratilis* J. & E. Reef r.
 588. *Jordanicus gracilis* Bleeker. Reef r.

Family CXX.

BALISTIDÆ. The Trigger-Fishes.
Humuhumu.

589. *Balistapus aculeatus* L. Humuhumu.
 Reef c.
 590. *Balistapus rectangulus* Schneider. Humuhumunukunukuapaa. Reef c.
 591. *Sufflamen vidua* Solander. Humuhumu-hiukoli; Humuhumu-uli. Reef c.
 592. *Sufflamen bursa* Lacépède. Humuhumu Lei. Reef.
 593. **Sufflamen capistratus* Shaw. Humuhumunumi; Mimi. Reef c.
 594. *Sufflamen fuscolineatus* Seale. Reef r.
 595. *Sufflamen nycteris* J. & E. Reef r.
 596. *Sufflamen fuscus* Schneider. Reef r.
 597. *Canthidermis angulosus* Q. & G. Reef r.
 599. *Canthidermis aureolus* Richardson.
 Reef (Laysan) r.
 600. *Xanthichthys lineopunctatus* Holland.
 Reef r.
 601. *Melichthys radula* Solander. Humuhumu Elele. Reef c.
 602. *Melichthys buniva* Lacépède. Reef.

Family CXXI.

MONACANTHIDÆ. The Leather-Jackets.
Oili.

603. *Cantherines sandwichensis* Quoy & Gaimard. Oilepi; Ohua. Reef c.

604. *Cantherines verecundus* E. K. Jordan.
 Reef.

605. *Cantherines albopunctatus* Seale. Reef r.
 606. *Monacanthus spilosomus* Lay & Bennett.
 Oili; Uiuwi. Reef c.
 607. *Monacanthus pricei* Snyder. Reef r.
 608. *Osbeckia liturosa* Shaw. Oililepa. Reef.
 609. *Alutera monoceros* Osbeck. Loulu. Reef.

Family CXXII.

TETRAODONTIDÆ. The Puffers.
Mahimahi.

610. *Lagocephalus oceanicus* J. & E. Pel. r.
 611. *Sphæroides florealis* Cope. Reef r.
 612. *Liosaccus cutaneus* Günther. Reef r.
 613. *Tetraodon hispidus* L. Oopuhue. Balloonfish; Gourd fish. Est. c.
 614. *Tetraodon lacrymatus* Cope. Reef r.

Family CXXIII.

CANTHIGASTERIDÆ. The Sharp-Backed
Puffers.

615. *Canthigaster jactator* Jenkins. Reef r.
 616. *Canthigaster oahuensis* Jenkins. Reef r.
 617. *Canthigaster cinctus* Solander. Reef r.
 618. *Canthigaster psegma* J. & E. Reef.
 619. *Canthigaster janthimus* Vaillant & Sauvage. Reef r.
 620. *Canthigaster epilamprus* Jenkins. Puu Olai. Reef r.
 621. *Canthigaster rivulatus* Schlegel. Reef r.
 622. *Canthigaster margaritatus* Rüppell.
 Reef r.

Family CXXIV.

DIODONTIDÆ. The Porcupine-Fishes.

623. *Chilomycterus affinis* Günther. Reef.
 625. *Diodon holacanthus* L. Reef.
 626. *Diodon nudifrons* Jenkins. Reef.

Family CXXV.

MOLIDÆ. The Head-Fishes.

627. *Ranzania makua* Jenkins. Makua;
 Apuhu. Mid. r.
 628. *Masturus lanceolatus* Liénard. Mid. r.
 629. *Mola mola* Linnaeus. Mid. r.

Family CXXVI.

OSTRACIIDÆ. The Trunk Fishes.
Moa.

630. *Ostracion cubicus* L. Reef r.
 631. *Ostracion seabæ* Bleeker. Moa. Reef c.
 632. *Ostracion oahuensis* J. & E. Reef.
 633. *Ostracion lentiginosum* Schneider.
 Oopakuku. Reef.
 634. *Ostracion fornasini* Bianconi. r.
 635. *Lactoria schwemmeri* Jordan & Snyder.
 Reef (Laysan).
 636. *Lactoria galeodon* Jenkins. Reef.
 637. *Capropygia spilopota* Gilbert.
 Reef (Laysan) r.

Family CXXVII.

LOPHIIDÆ. The Goose-Fishes.

638. *Lophiomus micanthus* Gilbert. Bath. r.

Family CXXVIII.

ANTENNARIIDÆ. The Fishing Frogs.

639. *Antennarius bigibbus* Lacépède. Reef r.
 640. *Antennarius commersonii* Lacépède.
 Reef c.

641. *Antennarius sandvicensis** Bennett. Reef.
642. *Antennarius leprosus* Eydoux & Souleyet. Reef.
643. *Antennarius laysanensis* J. & S. Reef (Laysan).
644. *Antennarius drombus* J. & E. Reef.
645. *Antennarius duscus* Snyder. Reef.
646. *Antennarius nexilis* Snyder. Reef.

Family CXXIX.

- CHAUNACIDÆ. The Deep Sea Toads.
647. *Chaunax umbrinus* Gilbert. Bath.

Family CXXX.

- CERATIIDÆ. The Deep Sea Devils.
648. *Miopsaras myops* Gilbert. Bath. r.

Family CXXXI.

- OCOCEPHALIDÆ. The Sea Bats.
649. *Malthopsis mitrigeria* Gilbert & Cramer. Bath. c.
650. *Malthopsis jordani* Gilbert. Bath.
651. *Halieutæa retifera* Gilbert. Bath.
652. *Dibranchius erythrinus* Gilbert. Bath. r.
653. *Dibranchius stellulatus* Gilbert. Bath. r.

INTRODUCED FISHES

Family CYPRINIDÆ.

The Carp and Dace.

1. *Cyprinus carpio* Linnaeus. The Carp—in ponds of Maui and Kauai.
2. *Carassius auratus* Linnaeus. The Goldfish—escaped from aquaria into some streams.

Family COBITIDÆ. The Loaches.

- Misgurnus anguillicaudatus* Cantor. The common loach of Japan now found in brooks of Oahu.

Family AMEIURIDÆ, The Horned Pout.

3. *Ameiurus nebulosus* Le Sueur. The common Cat-fish, or Horned Pout of the Potomac—said to have been brought from Sacramento to Hilo.

Family CLARIIDÆ, Asiatic Cat-fishes.

4. *Clarias fuscus* Lacépède. A river cat-fish brought over from China.

Family CYPRINODONTIDÆ,

The Killifishes.

5. *Fundulus grandis* Baird & Girard. Florida Killifish. Introduced from Galveston; not known to have survived.

Family PÆCILIIDÆ, The Top-Minnows.

6. *Gambusia patruelis* Baird & Girard. Mosquito fish. Brought from Texas in 1904

by Alvin Seale as a destroyer of mosquito larvæ, an achievement in which it has no rival, being hardy, active, hungry, and harmless to other fishes. The common species is No. 7. Common in all fresh waters.

7. *Mollienesia latipinna* LeSueur. A very handsome top-minnow, introduced with *Gambusia* but by choice a plant-feeder and not very useful in destroying mosquitoes. Now found in ponds of Oahu.

Family OPHICEPHALIDÆ,

The Snake-Head Fishes.

8. *Ophicephalus striatus* Bloch. Introduced into ponds by Chinese.

Family CENTRARCHIDÆ.

The American Sun-Fishes.

9. *Huro nigricans* Cuvier. The Big-mouth Black Bass. Introduced in ponds of Hawaii and Kauai.

Family SALMONIDÆ, The Trout.

10. *Trutta shasta* Jordan. The Shasta Rainbow Trout. Introduced into streams of Kauai.

Plecoglossus altivelis Schlegel. The Ayu. Eggs from Japan planted in streams of Hawaii, Oahu and Kauai.

Of the species listed here, 655 in number, 61 are pelagic fishes, sweeping through the open sea and living near the face. 108 are bathybial, inhabiting the dark ocean depths and not rising towards the surface, except sometimes in storms. Most of these are provided with luminous spots or lanterns by which they find their way in the darkness.

63 are midway in position, seldom coming into shallow water, but never dropping to great depths.

375 live near or on the coral reefs or in similar localities at no great depth.

23 inhabit estuaries and river mouths, seldom venturing outside the reefs.

This list must not be interpreted too

* Most of the nominal species of this genus may prove to be color variants of *Antennarius commersonii*.

rigidly, as fishes are by no means closely confined and some wander very widely from their original homes.

62 of the species enumerated are of high commercial value, 58 are of superior excellence as food.

Many of the smaller species are of excellent flesh, though the bones in a small fish are more annoying than in a large one. Numerous other groups have a large commercial value, in which numerous species take part, as in the tribes called Uu, Aleihi, Wake, and Hinalea.

Two species are reckoned as poisonous, the poison, according to the investigations of Dr. Nils P. Larsen and of Mr. R. W. Smith, residing mainly in the ovaries of the female, the flesh itself being innocuous. These are the opu-hue, (*Tetraodon hispidus*), and the opu-hai (*Chilomycterus affinis*). To eat the brain of the Weke Pahulu (*Upenoides arge*) causes temporary delirium. According to Dr. Larsen, the tissues of the brain are fatal to small animals.

124 species may be regarded as common, being represented in the market more or less through most of the year.

208 are rare, taken only at long intervals, and many of them known from a single example.

When the Hawaiian Islands had been thrust up, one after another, as lava from a break in the bottom of the sea, no fishes lived about them. There were then, as now, wander-

ing pelagic fishes, not closely confined to any particular locality. The depths of the sea had also its own types, descended for the most part from fishes which lived near the surface, these having been slowly modified to fit the conditions of their life. We can know little directly of the nature of these forms, as they are found very rarely as fossils. To be preserved, the seabottom on which they lived must have been raised by earthquakes but without outpourings of lava. Great heat destroys fossils.

The shore fishes of Hawaii must have been derived from other sources, and it is a matter of interest to try to trace them back. Most of them have come from the East Indies, by way of the easterly equatorial currents which flow from Java to the Philippines, Fiji, Samoa, Tahiti, and the Marquesas. From the off-shore islands of Mexico, the current sets westward again, carrying young fishes on to Hawaii, most of the species being modified into new ones on the way or more likely after arrival. A few species seem to have come directly from Japan.

We make our estimate of the origin of the extent of these classes of shore or reef fishes as follows:

Derived from the South Seas unchanged—144 species.

Derived from the South Seas but so altered as to be distinct species — 260 species.

Derived from Japan—18 Species.

Derived from Mexico—4 species.

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